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EXAMINER

THOMPSON JR, FOREST

ART UNIT PAPER NUMBER

3625

DATE MAILED: 07/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

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Action Code Final Rejection

Base Date 7-25-02

Due Date 10-25-02

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## Office Action Summary

**Application No.**

09/392,018

**Applicant(s)**

MADOFF ET AL.

**Examiner**

Forest O. Thompson Jr.

**Art Unit**

3625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 and 32-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 and 32-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Response to Amendment*

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action (See Paper No. 4). The text of those sections of Title 35, U.S. Code not otherwise provided in a prior Office action will be included in this action where appropriate.

2. This action is responsive to the amendment (amendment C) filed on 30 April 2002 (see Paper #16). Amendment C amended claims 1, 11 and 21, and added new claims 32-34. **Claims 1-30 and 32-34 are pending.**

3. **Claims 1-30 and 32-34 have been examined.**

### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 11, 21 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: determining an opening price for a product. Claims 1, 11, 21, and 32 state in the preamble a method for determining an opening price, a computer program product for determining an

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opening price, a system for determining an opening price, and a method for determining an opening price, respectively. However, no claim steps in these claims present an opening price as a feature of the invention. Correction is required.

***Claim Rejections - 35 USC 102***

6. Claims 1, 11 and 18 were rejected in Paper #13 under 35 U.S.C. 102(e) as being anticipated by **Rickard et al.** (U.S. Patent No. 6,016,483), and separately by Chan, K.C.; Christie, William G.; Schultz, Paul H.; "Market structure and the intraday pattern of bid-ask spreads for NASDAQ securities," Journal of Business, vol. 68, n1, pg. 35(26), 07666891; January 1995 (hereafter referred to as **Chan et al.**). **Chan et al.** does not explicitly identify the use of computers, workstations or servers as used in the art, as per claim 21, and some other features of the invention. **Chan et al.** does disclose some features of applicant's invention. Therefore, the 35 U.S.C. 102(e) rejection using **Chan et al.** exclusively is withdrawn. The rejection using **Rickard et al.** is maintained. In the following paragraphs, examiner presents the 35 U.S.C. 102(e) rejections based on **Rickard et al.**

7. Claims 1-5, 10-15, and 18-30 are rejected under 35 U.S.C. 102(e) as being anticipated by **Rickard et al.** (U.S. Patent No. 6,016,483)

Claim 1: **Rickard et al.** discloses:

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- receiving orders from customers for the product (col. 8 lines 6-34);
- determining an imbalance condition between received buy orders and received sell orders for the product (col. 9 lines 3-21); and
- posting an allocation message to market maker participants to communicate the market maker participants' expected allocation of the imbalance for execution by the market maker participants at an initial opening of the market on the side of the imbalance in the event that the imbalance exists at the opening (col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25), as disclosed by **Rickard et al.** in the disclosure:

- Col. 6 lines 34-60:

Each market maker comes to the opening with his or her own current position (as specified by delta and gamma) and his or her desired target position after the opening (as specified by delta and gamma). The desired target position may be dependent upon the absolute and relative values of implied volatilities determined at the opening. These current and target positions impact the market maker's preferences on participation in the rectification of imbalances in public orders among the different series. Thus, according to the principles of the present invention, the assignment of public orders can be optimized across all market makers.

The present invention proceeds in two stages. At the first stage, the present invention determines a reasonably consistent set of implied volatilities that will maximize a weighted volume of trades across all series at the opening. At the

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completion of the first stage, there generally will be a residual imbalance in the public orders in each series that do not match off between buyers and sellers. These residual imbalances among public orders are required to be offset by assigning contra positions to the market makers. Accordingly, at the second stage, the present invention assigns residual public orders to market makers so as to minimize a cumulative measure of deviation between the post-opening desired target positions and the actual positions of each market maker at the conclusion of the first stage. (emphasis added); and

- Col. 7 lines 13-17:

The opening PRICES and corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position.

- Col. 10 lines 40-54:

The final step is to determine the (coordinated) value(s) of  $\sigma_{sub,j}$  in equation (1) for which the corresponding values of  $\sigma_{sub,i}$  maximize the total weighted volume traded over all option series. For these particular volatility value(s), the corresponding price is determined for each series, and the two nearest trading increments above and below this price are identified. If there exists at both price increments a corresponding residual imbalance of buyers among the public orders, the controller 2 sets as the opening PRICE the higher of the two, and vice versa for

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the case of a seller imbalance at both prices. If the imbalance switches from buyers to sellers between the two price increments, the controller 2 selects as the opening PRICE the one yielding the higher mutual satisfaction weighted volume in that series.

- Col. 11 lines 19-25:

Once the values of  $\sigma_{sub.i}$  are determined by one of the above procedures, they are substituted into the  $\sigma$  arguments in equations (3) through (10) below. At the exchange's option, these opening volatilities could be output to the market makers (or other interested persons) prior to proceeding into the second stage optimization of market maker assignments to public order imbalances. This would give the market makers more information upon which to determine their delta and gamma targets as detailed below.

Claim 2: **Rickard et al.** discloses the orders are orders at a market price and are orders for customer accounts (col. 9 lines 15-25).

Claim 3: **Rickard et al.** discloses disseminating a message that indicates a current imbalance between buy and sell orders (col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25).

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Claim 4: **Rickard et al.** discloses the products are financial instruments (col. 2 lines 63-66; col. 3 lines 62-67; col. 4 line 1).

Claim 5: **Rickard et al.** discloses:

- disseminating a message that indicates a current imbalance between buy and sell orders for the product (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25); and
- wherein determining an imbalance condition, posting an allocation message to market participants, and disseminating an imbalance message over regular periods of time occur between the initial reception of orders and actual opening of the trading system (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25).

Claim 10: **Rickard et al.** discloses the orders are limit orders and wherein marketable ones of those limit orders are applied to reduce the imbalance (col. 6 line 32 - col. 7 line 17; col. 10 line 40 - col. 11 line 16).

Claim 11: Claim 11 is written as a computer program product and contains the same limitations as claim 1; therefore, the same rejection is applied;



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Claim 12: Claim 12 is written as a computer program product and contains the same limitations as claim 2; therefore, the same rejection is applied;

Claim 13: Claim 13 is written as a computer program product and contains the same limitations as claim 3; therefore, the same rejection is applied;

Claim 14: Claim 14 is written as a computer program product and contains the same limitations as claim 4; therefore, the same rejection is applied;

Claim 15: Claim 15 is written as a computer program product and contains the same limitations as claim 5; therefore, the same rejection is applied;

Claim 18: **Rickard et al.** discloses:

- accept limit orders (col. 3 lines 51-67; col. 4 lines 1-3; col. 8 lines 6-34; col. 12 lines 51-57); and
- allocating the remaining imbalance amongst market makers after applying predefined relative indications to eliminate the imbalance (col. 6 line 34 - col. 7 line 33).

Claim 19: **Rickard et al.** discloses instructions that cause the computer to determine an opening price based on first free and open quote and whether there is still an imbalance (Abstract; col. 9 lines 33-54).

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Claim 20: **Rickard et al.** discloses instructions that cause the computer to execute the entire amount of accumulated shares as a single block at one price (col. 9 lines 33-54).

Claim 21: **Rickard et al.** discloses:

- a plurality of workstations for entering orders (col. 8 lines 10-65);
- a server computer (col. 8 lines 9-10), as a central controller;
- receive orders for a product (col. 8 lines 6-34);
- determine an imbalance condition between received buy orders and received sell orders (col. 9 lines 3-21); and
- post an allocation message to market maker participants to communicate the market maker participants' expected allocations of the imbalance for execution by the market maker participants at an initial opening of the market in the event that the imbalance exists at the opening (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25).

Claim 22: **Rickard et al.** discloses the computer program product further comprises instructions for causing the server to receive limit orders for the product (col. 3 lines 51-67; col. 4 lines 1-3; col. 8 lines 6-34; col. 12 lines 51-57).

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Claim 23: Claim 23 is written as a computer program product and contains the same limitations as claim 3; therefore, the same rejection is applied.

Claim 24: Claim 24 is written as a computer program product and contains the same limitations as claim 4; therefore, the same rejection is applied.

Claim 25: Claim 25 is written as a computer program product and contains the same limitations as claim 18; therefore, the same rejection is applied.

Claim 26: **Rickard et al.** discloses disseminating a message that indicates a current imbalance between buy and sell orders for the product is a publicly disseminated message (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25).

Claim 27: Claim 27 is written as a computer program product and contains the same limitations as claim 26; therefore, the same rejection is applied.

Claim 28: **Rickard et al.** discloses instructions to disseminate a message that indicates a current imbalance between buy and sell orders for the product is a publicly disseminated message (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25).

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Claim 29: Claim 29 is written as a computer program product and contains the same limitations as claim 28; therefore, the same rejection is applied.

Claim 30: **Rickard et al.** discloses disseminating a message that indicates a current imbalance between buy and sell orders for the product is a publicly disseminated message (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25).

***Claim Rejections - 35 USC 103***

8. Claims 6-9, 16-17, and 32-34 were rejected under 35 U.S.C. 103(a) as being unpatentable over **Rickard et al.** (U.S. Patent No. 6,016,483), and further in view of Chan, K.C.; Christie, William G.; Schultz, Paul H.; "Market structure and the intraday pattern of bid-ask spreads for NASDAQ securities," Journal of Business, vol. 68, n1, pg. 35(26), 07666891; January 1995 (hereafter referred to as **Chan et al.**). The rejections have been amended to remove the use of the reference **Chan et al.**

9. Claims 6-9, 16-17, and 32-34 were rejected under 35 U.S.C. 103(a) as being unpatentable over **Rickard et al.** (U.S. Patent No. 6,016,483)

Claim 6: **Rickard et al.** does not specifically disclose establishing a lock-in period that requires market makers to specify whether they accept the last anticipated share

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allocation received by them in order that their allocation will not be further reduced.

However, Official Notice is taken that establishing a lock-in period (e.g., a period of time when an option is open or available and may be selected, accepted and obligateded) is old and well known to one skilled in the art at the time the invention was made. This concept is used in the stock market as well as other areas of the business world in the conduct of business. Also, a lock-in period is implied/inferred by **Rickard et al.** in:

- The opening prices and corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position (col. 7 lines 13-17); and
- At the second stage, each market maker supplies as input his or her current delta and gamma positions prior to the opening and his or her desired delta and gamma positions after the opening. (If required, other measures, such as theta, rho and vega, also could be included as target variables.) Public orders are allocated to market makers according to the solution to this second optimization problem (col. 7 lines 27-33).

These disclosures of **Rickard et al.** imply/infer a period of time (e.g., a lock-in period) prior to the opening during which market makers may input their desired positions at or after the opening.

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Claim 7: **Rickard et al.** discloses applying received predefined relative indications to an imbalance that exists subsequent to establishing the lock-in period (col. 7 lines 27-33).

Claim 8: **Rickard et al.** discloses allocating the remaining imbalance amongst market makers after applying predefined relative indications to eliminate the imbalance (col. 7 lines 27-33).

Claim 9: **Rickard et al.** discloses determining an opening price based on allocated imbalance amongst the market participants and applied predefined relative indications (col. 6 line 46 - col. 7 line 47).

Claim 16: Claim 16 is written as a computer program product and contains the same limitations as claim 6; therefore, the same rejection is applied;

Claim 17: Claim 17 is written as a computer program product and contains the same limitations as claim 7; therefore, the same rejection is applied;

Claim 32: **Rickard et al.** discloses:

- receiving orders from customers for the product (col. 8 lines 6-34);

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- determining an imbalance condition between received buy orders and received sell orders for the product (col. 9 lines 3-21); and
- posting an allocation message to market maker participants to communicate the market maker participants' expected allocation of the imbalance for execution by the market maker participants at an initial opening of the market on the side of the imbalance in the event that the imbalance exists at the opening (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25) , as disclosed by **Rickard et al.** in the disclosure:

- Col. 6 lines 34-60:

*Each market maker comes to the opening with his or her own current position (as specified by delta and gamma) and his or her desired target position after the opening (as specified by delta and gamma). The desired target position may be dependent upon the absolute and relative values of implied volatilities determined at the opening. These current and target positions impact the market maker's preferences on participation in the rectification of imbalances in public orders among the different series. Thus, according to the principles of the present invention, the assignment of public orders can be optimized across all market makers.*

*The present invention proceeds in two stages. At the first stage, the present invention determines a reasonably consistent set of implied volatilities that will maximize a weighted volume of trades across all series at the opening. At the completion of the first stage, there generally will be a residual imbalance in the*

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*public orders in each series that do not match off between buyers and sellers.*

*These residual imbalances among public orders are required to be offset by assigning contra positions to the market makers. Accordingly, at the second stage, the present invention assigns residual public orders to market makers so as to minimize a cumulative measure of deviation between the post-opening desired target positions and the actual positions of each market maker at the conclusion of the first stage.*

- Col. 7 lines 13-17:

*The opening PRICES and corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position.*

- Col. 10 lines 40-54:

The final step is to determine the (coordinated) value(s) of  $\sigma_{.sub.j}$  in equation (1) for which the corresponding values of  $\sigma_{.sub.i}$  maximize the total weighted volume traded over all option series. For these particular volatility value(s), the corresponding price is determined for each series, and the two nearest trading increments above and below this price are identified. If there exists at both price increments a corresponding residual imbalance of buyers among the public orders, the controller 2 sets as the opening PRICE the higher of the two, and vice versa for the case of a seller imbalance at both prices. If the imbalance switches from buyers



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to sellers between the two price increments, the controller 2 selects as the opening PRICE the one yielding the higher mutual satisfaction weighted volume in that series.

**Rickard et al.** does not specifically disclose over a first plurality of intervals of time prior to a market opening, posting a first corresponding plurality of allocation messages to market maker participants to communicate the market maker participants' expected allocations of the imbalance for execution by the market maker participants at an initial opening of the market on the side of the imbalance in the event that the imbalance exists at the opening. However, as stated above, **Rickard et al.** does disclose:

- *At one extreme, there is the optimum implied volatility that can be determined so that there is absolute consistency in implied volatility across all series. At the other extreme, there is the optimum volatility of each individual series that can be determined to satisfy market supply and demand. The present invention computes a set of opening implied volatilities that set a reasonable compromise between these extremes. From these implied volatility value(s), the corresponding price is determined for each option series. The present invention also enables an exchange (or other entity) to determine the compromise point between these two positions (col. 6 line 63 - col. 7 line 7).*
- *When an options exchange opens trading each morning, or reopens trading after a trading halt in the underlying instrument during the trading day, the exchange conducts an opening "rotation" procedure to determine the opening price for each*

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*option. The opening rotation may take upwards of 45 minutes, during which time the price of the underlying instrument may change dramatically. Presently, the opening rotation consumes a significant portion of the trading day. Additionally, present methods used by options exchanges to allocate the residual imbalance in public orders to market makers at the opening often results in undesirable and inefficient allocations (col. 1 lines 25-42).*

*- The first and the second stage are independent and either could be implemented without the other. For example, an options exchange may implement only the first stage to determine the opening PRICE for each option but decide to allocate residual public order imbalances using the present round-robin assignment of the residual contracts to each market maker. Alternatively, an options exchange may implement only the second stage, using the present opening rotation procedure to determine the opening PRICE for each option but utilizing the present invention to allocate residual public order imbalances to market makers. By extension, the present invention also can be used to effect trading in periodic or event driven call market structures (the later not to be confused with call option types) (col. 7 lines 34-47).*

*- Once the values of  $\sigma_{sub.i}$  are determined by one of the above procedures, they are substituted into the  $\sigma$  arguments in equations (3) through (10) below. At the exchange's option, these opening volatilities could be output to the market makers (or other interested persons) prior to proceeding into the second stage optimization of market maker assignments to public order imbalances. This would give the market*

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*makers more information upon which to determine their delta and gamma targets as detailed below (col. 11 lines 19-25).*

Therefore, the disclosures of the opening rotation, the round robin, and the output of opening volatilities to market makers prior to proceeding to the second stage optimization by **Rickard et al.** in combination with other disclosures identified above are interpreted by examiner as encompassing the claimed feature of the applicant's invention, i.e., over a first plurality of intervals of time prior to a market opening, posting a first corresponding plurality of allocation messages to market maker participants to communicate the market maker participants' expected allocations of the imbalance for execution by the market maker participants at an initial opening of the market on the side of the imbalance in the event that the imbalance exists at the opening. Therefore, examiner rejects the claim.

Claims 33-34: **Rickard et al.** does not specifically disclose an interval of time between each allocation message decreases as the time to the opening decreases, nor an interval of time between each market imbalance message to the public decreases as the time to the opening decreases. However, Official Notice is taken that it was old and well known in the art at the time the invention was made that a system could speed up the occurrence of messages as a time period in which action may be taken grows shorter in order to influence actions by participants in an action or program. The speed-up would provide encouragement and/or pressure on participants to accomplish an

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action within the time constraints. The same principle applies here, to encourage or influence market maker participation. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of **Rickard et al.** to disclose an interval of time between each allocation message decreases as the time to the opening decreases, and an interval of time between each market imbalance message to the public decreases as the time to the opening decreases, as disclosed by old and well known art, because this could influence market markers to participate expeditiously in the system within established time constraints.

### ***Response to Arguments***

10. Applicant's arguments filed on 30 April 2002 (see Paper #16) have been fully considered but they are not persuasive.

a. Applicant argues, in Paper #16 on pg. 4, on April 11, 2002 the *examiner and the examiner's supervising examiner, Ms. Wynn Coggins, had a telephone interview with the applicant's representatives. On the basis of those discussions, applicant has amended claims 1, 11 and 21 to more particularly point out and distinctly claim the invention. We acknowledge Examiner's withdrawal of Chan as a prior art reference during the telephone interview.*

Examiner disagrees with applicant's comments with respect to the Chan reference. Examiner did withdraw the Chan reference as a 35 U.S.C. §102 reference.

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However, Chan does disclose aspects of applicant's invention and may still be used as prior art as a 35 U.S.C. §103 reference.

b. Applicant argues, on pg. 4:

*The Examiner rejected claim 1 and claims under 35 U.S.C. §102 (e), as being anticipated by Rickard.*

*Applicant's claims are distinct from Rickard. For example, in claim 1, Rickard neither describes nor suggests posting an allocation message to market maker participants to communicate the market maker participants' expected allocations of the imbalance for execution by the market maker participants at an initial opening of the market on the. side of the imbalance in the event that the imbalance exists at the opening.*

*Rickard mentions sending messages after the initial opening (column 7 lines 14-18). According to Rickard however, the messages are optional (i.e., can) and are intended to assist determining post-opening desired target positions. These messages do not teach allocation messages to communicate expected allocations of the imbalance at an initial opening of the market in the event that the imbalance exists at the opening.*

Examiner disagrees. Rickard discloses, at col. 7 lines 13-17, *The opening PRICES and corresponding volatilities, once determined by the present invention, can*

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*be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position. This message is interpreted by examiner as disclosing, before the opening, the market maker participants' expected allocations of the imbalance for execution by the market maker participants at an initial opening of the market on the side of the imbalance. Opening prices are determined before the opening, as disclosed by Rickard in the disclosure A computer-based system for determining a set of opening PRICES for a number of series of options traded on an options exchange and for allocating public order imbalances at the opening of trading (Abstract).* Examiner maintains the rejection.

b. Applicant argues, on pg. 4-5:

*Rickard assigns a residual balance of any imbalance of orders to market makers based on an algorithm that minimizes a cumulative measure of deviation between post-opening target and current positions. Nowhere in Rickard is expressed the teachings of posting an allocation message to market maker participants to communicate an expected allocation of the imbalance for execution at an initial opening in the event that the imbalance exists at the opening. Rickard merely assigns an allocation whereas claim 1 calls for posting a message that indicates an expected allocation.*

*Examiner also rejected claim 11 and 21. These claims are distinct over Rickard based generally on the argument above and for the reasons of record. These claims should also be allowable.*

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*Dependent claims 2-10, 26 and 27, which depend directly or indirectly on claim 1, claims 12-20, 28, and 29, which depend directly or indirectly on claim 11, and claims 22-25, 30 and 31, which depend directly or indirectly on claim 21 should also be allowed. These claims add additional distinct features and are distinct at least for the reasons discussed in their respective base claims and for the reasons of record.*

Examiner disagrees. Rickard discloses:

- Col. 7 lines 13-17:

The opening PRICES and corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position.

- Col. 11 lines 19-25:

Once the values of  $\sigma_{i,j}$  are determined by one of the above procedures, they are substituted into the  $\sigma_{i,j}$  arguments in equations (3) through (10) below. At the exchange's option, these opening volatilities could be output to the market makers (or other interested persons) prior to proceeding into the second stage optimization of market maker assignments to public order imbalances. This would give the market makers more information upon which to determine their delta and gamma targets as detailed below.

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Examiner asserts that these disclosures disclose the functionality of a message being distributed to market maker participants prior to the opening. Therefore, Examiner maintains the rejection.

c. Applicant argues, on pg. 5:

*Applicants have added new claim 32. Claim 32 recites over a first plurality of intervals of time prior to a market opening, posting a first corresponding plurality of allocation messages to market maker participants to communicate expected allocations ... in the event that the imbalance exists at the opening and over a second plurality of intervals of time prior to the market opening, disseminating a second corresponding plurality of market imbalance messages to the public. Rickard neither describes nor suggests these elements. Rickard does not have any teachings that would suggest the desirability of disseminating multiple messages. Also, Rickard does not suggest that these multiple messages are disseminated periodically.*

Examiner disagrees. As stated in the rejection of claim 32 in section 8 of this Paper, Rickard discloses:

- Abstract:

A computer-based system for determining a set of opening PRICES for a number of series of options traded on an options exchange and for allocating public order imbalances at the opening of trading. Market makers input a current position, a



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desired target position and market maker orders for options series from market maker terminals. An order entry system receives public orders for options series. A controller determines a set of implied volatilities (prices) for each options series that will maximize a weighted volume of trades across all option series at the opening. Contra orders that can be matched at the opening PRICE are then executed. If there is a residual imbalance of non-executed public orders, the residual imbalance of non-executed public orders is assigned to individual ones of the plurality of market makers so as to minimize a cumulative measure of deviation between the desired target position and the current position of each market maker.

- Col. 6 lines 34-60:

Each market maker comes to the opening with his or her own current position (as specified by delta and gamma) and his or her desired target position after the opening (as specified by delta and gamma). The desired target position may be dependent upon the absolute and relative values of implied volatilities determined at the opening. These current and target positions impact the market maker's preferences on participation in the rectification of imbalances in public orders among the different series. Thus, according to the principles of the present invention, the assignment of public orders can be optimized across all market makers.

The present invention proceeds in two stages. At the first stage, the present invention determines a reasonably consistent set of implied volatilities that will maximize a weighted volume of trades across all series at the opening. At the

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completion of the first stage, there generally will be a residual imbalance in the public orders in each series that do not match off between buyers and sellers. These residual imbalances among public orders are required to be offset by assigning contra positions to the market makers. Accordingly, at the second stage, the present invention assigns residual public orders to market makers so as to minimize a cumulative measure of deviation between the post-opening desired target positions and the actual positions of each market maker at the conclusion of the first stage.

- Col. 7 lines 13-17:

The opening PRICES and corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position.

Examiner maintains that the process of assigning of residual public orders to market makers as disclosed by **Rickard et al.** (as stated above) encompasses posting an allocation message and disseminating an imbalance message. Additionally, although **Rickard et al.** does not specifically disclose disseminating an imbalance message over regular periods of time occur between the initial reception of orders and actual opening of the trading system, Examiner maintains that the invention of **Rickard et al.** encompasses this aspect in the above disclosure of *The opening PRICES and*

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*corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position, which provides the functionality of posting a message to market makers. Additionally, Rickard et al. does not specifically limit the number of times that the opening prices may be considered or outputted. It would have been obvious to one skilled in the art at the time the invention was made that the determination of opening prices is a continuing process over some time period before the opening and that messages could be disseminated multiple times, as necessary to communicate the changing status of the market's opening prices and corresponding volatilities before the opening. Rickard implies this in the disclosure of *The first and the second stage are independent and either could be implemented without the other. For example, an options exchange may implement only the first stage to determine the opening PRICE for each option but decide to allocate residual public order imbalances using the present round-robin assignment of the residual contracts to each market maker* (col. 7 lines 34-47).*

Therefore, Examiner rejects the new claim.

d. Applicant argues, on pg. 5:

*Claims 33 and 34 which recite that an interval of time between each allocation message decreases as the time to the opening decreases (claim 33) and an interval of*

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*time between each market imbalance message to the public decreases as the time to the opening decreases (claim 34) are further distinct.*

Examiner disagrees. As stated in the rejection of claims 33-34 in section 8 of this Paper, **Rickard et al.** does not specifically disclose an interval of time between each allocation message decreases as the time to the opening decreases, nor an interval of time between each market imbalance message to the public decreases as the time to the opening decreases. However, Official Notice is taken that it was old and well known in the art at the time the invention was made that a system could speed up the occurrence of messages as a time period in which action may be taken grows shorter in order to influence actions by participants in an action or program. The speed-up would provide encouragement and/or pressure on participants to accomplish an action within the time constraints. The same principle applies here, to encourage or influence market maker participation. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of **Rickard et al.** to disclose an interval of time between each allocation message decreases as the time to the opening decreases, and an interval of time between each market imbalance message to the public decreases as the time to the opening decreases, as disclosed by old and well known art, because this could influence market markers to participate expeditiously in the system within established time constraints. Therefore, Examiner rejects the new claims.

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***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Forest O. Thompson Jr. whose telephone number is (703) 306-5449. The examiner can normally be reached on 6:30-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wynn Coggins can be reached on (703) 308-1344. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7687 for regular communications and (703) 305-7687 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

  
F. Thompson  
July 19, 2002

  
ARTHUR W. COGGINS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600